



## Disaster and Emergency Management Resources

### Standby Electric Generators

An emergency source of power is important for any farm with mechanically ventilated production facilities, bulk milk handling equipment, mechanical feeding equipment or facilities requiring constant and continuous heat (such as brooders). On such a farm, a standby electric generator is a good investment, possibly preventing costly losses during a power failure.

#### Type of Generators

- Standby generators are either engine-driven or tractor-driven. Either type can be stationary or portable. Engine-driven units can be either manual or automatic start. Gasoline-, LP gas- (bottled gas), and diesel-fueled engines are available.
- Generators must provide the same type of power at the same voltage and frequency as that supplied by power lines. This is usually 120/240-volt, single-phase, 60-cycle alternating current (AC). An air-cooled engine is often used for generators up to 15 kilowatts. A liquid-cooled engine is necessary for generators larger than 15 kilowatts. Engine capacity of 2 to 2 1/4 hp with the proper drive system must be available for each 1,000 watts of generator output.

#### Size of Generators

- A full-load system will handle the entire farmstead load. Automatic engine-powered, full-load systems will begin to furnish power immediately, or up to 30 seconds after power is off. Smaller and less expensive part-load systems may be enough to handle essential equipment during an emergency.
- Power-take-off (PTO) generators are about half as costly as engine-operated units. Under a part-load system, only the most essential equipment is operated at one time. For most farms, this type of system is adequate, provided the generator is sized to start the largest motor. For example, the milk cooler or ventilation fan would need to be operated continuously, but the operation of the silo unloader and mechanical feeding system could be postponed until the milking chores are completed. PTO units can be mounted on a trailer.

## **Installation**

- Wiring and equipment must be installed in accordance with the National Electrical Code, local ordinances, and the requirements of your power supplier. It is essential that you have the proper equipment for disconnecting the generator from public utility lines.
- Most companies require the installation of a double-pole double-throw transfer switch or its equivalent for this purpose. Check with your electrician or power supply representative for installation, installation instructions, and inspection

## **Location and Safety Features**

- Large engine generators should be located in a building, preferably a heated building.
- Inlet and outlet air ducts must be large enough to carry off excess heat. They should be open at least one-half square foot for each 1,000 watts of generator capacity.
- Combustion fumes must be carried outdoors safely. Exhaust pipes must be at least 6 inches from combustible material.

## **Maintenance**

- Keep the unit clean and in good running order at all times so it will be ready for immediate use. Dust and dirt accumulations on the motor can cause it to overheat when operated.
- Follow maintenance instructions in manufacturer's manual. A short operation at set intervals will keep the engine in good operating condition. Regularly scheduled warm-ups are necessary to keep a standby engine in working order

*Adapted from resource material developed by the University of Wisconsin Extension Service entitled "The Disaster Handbook for Extension Agents"*